

# Plant Diversity Website

## ***Vinca major*** Linnaeus

**Common Names:** Greater periwinkle, large periwinkle, bigleaf periwinkle, large leaved periwinkle, blue periwinkle, Greek periwinkle. It is often simply called periwinkle or myrtle (1,2,5,8,14,18).

**Etymology:** The generic name, *Vinca*, is short for the ancient name given by Pliny, *Vincaperivinca*. Common names for the genus in Italian (*pervinca*) and French (*pervenche*) resemble the ancient name. The species name, *major*, means “larger” (2).

**Botanical synonyms:** *Vinca grandiflora* Salisb. (3).

**FAMILY:** Apocynaceae (the Dogbane family)

**Quick Notable Features** (2,12):

- Simple, opposite, ovate leaves with ciliate margins and subcordate bases
- Perfect, radially symmetric, violet flowers with ciliate calyx lobes, and a pinwheel-like corolla
- Each flower produces 2 follicled fruits, 2.5-5cm long



**Plant Height:** Up to 1-2m tall (2,12).

**Subspecies/variety recognized** (3):

- V. major* subsp. *balcanica* (Pénzes) Kozuharov & Petrova
- V. major* subsp. *hirsuta* Stearn
- V. major* var. *hirsuta* Boiss.
- V. major* var. *variegata* Loudon

**Most Likely Confused with:** *Vinca minor*, *Vincetoxicum louiseae*, *Vincetoxicum rossicum*, *Lonicera* ssp., and *Campanula* ssp.



**Habitat Preference:** The greater periwinkle grows in sandy to heavy clay soils, moist to dry, and shaded or full sun (although it prefers shaded areas). In the United States, it usually escapes from cultivation to roadsides, edges of woods, and along rivers (2,10,11).

**Geographic Distribution in Michigan:** The greater periwinkle was only recently (2009) collected escaped from cultivation in Grand Traverse and Ottawa counties (1).

**Known Elevational Distribution:** *V. major* can grow from low to high elevations and was collected at 6500m above sea level in Puebla, Mexico (3).

**Complete Geographic Distribution:** Native to Southern Europe, Anatolia, and Northern Africa. In North America, it is found in the U.S. (AL, AR, AZ, CA, GA, ID, IL, KY, LA, MA, MD, MI, MS, NC, NM, NY, OH, OR, PA, SC, TN, TX, UT, VA, and WA), in BC, Canada, and in Mexico. In Europe, *V. major* is found in nearly all countries west of Austria, as well as Sweden, Finland, and Greece. The species was introduced to Argentina, Australia, Azerbaijan, Bolivia, Brazil, Chile, Colombia, Costa Rica, India, Japan, Luxembourg, New Zealand, Pakistan, Peru, South Africa, and Uruguay (1,5,8).



**Vegetative Plant Description:** *V. major* is perennial, evergreen, trailing or scrambling, and mostly herbaceous (with a woody caudex). The dark green stems produce milky sap. The stems root at the nodes and apex. The nearly glabrous petioles are short (less than 2.5cm long) and glandular; stipules are absent. The pinnately-veined opposite leaves are 4-ranked and simple, ovate to broad ovate, with a cordate to subcordate base and acute apex. Each ovate leaf is 2-9cm long and 2-6cm broad (broadest near the base), entire margined, ciliate (cilia to 1mm long), covered by a waxy coat (1,2,11,12,16,17).



**Climbing Mechanism:** *V. major* scrambles over adjacent vegetation or structures (6). No tendrils, or twining apices are noted in the literature.

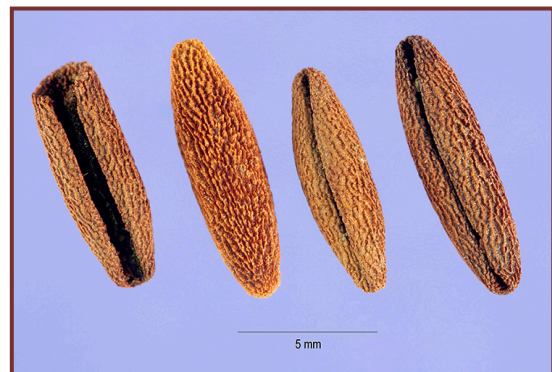
**Flower Description:** Axillary flowers (2.5-5cm across) of the greater periwinkle are solitary, perfect, and actinomorphic. The pedicels are 3-5cm long. The 5 calyx lobes are acuminate, marginally ciliate, 1-1.5cm long, and glandless. The blue to violet (rarely white) corolla is 5-parted, salver-form, with asymmetrical petals twisted like a pinwheel, each 1.2-1.5cm long. The 5 apically puberulent

stamens are adnate to the throat of the corolla, alternating with the corolla lobes; the filaments are distinct. The two ovaries are superior, unfused and alternate with two nectaries. The styles and stigmas however are fused. The style (ca. 1.5cm long) is filiform with a hairy capitate stigma (2,4,12,16,17,18).

**Flowering Time:** In Central and Northeastern U.S., *V. major* flowers from April-May (2).

**Pollinator:** The flowers of *V. major* have paired nectaries that attract bees, hawkmoths, and other insects to pollinate them (4,10,11,13).

**Fruit Type and Description:** Each flower produces two short-cylindrical follicles (2.5-5cm long) that taper at the apex. When mature, each follicle dries and opens, releasing 3-5 seeds (2,12).



**Seed Description:** The seeds of *V. major* are glabrous: no coma (tuft of hairs) is produced, as is common among Apocynaceae. The seed has a rough surface and is 0.7-1cm long and about 0.2cm wide (2,11,12, see seed image).

**Dispersal Syndrome:** The follicles open to expose the seeds, and no specific dispersal method was found. In California, the seeds rarely mature. The greater periwinkle reproduces vegetatively by stolons that root at the tips and nodes. Additionally, broken stems can be carried by water and take root (11,12,14,17).



**Distinguished by:** *Vinca minor* appears like a smaller version of *V. major*, yet bears a few distinctive features. *V. minor* has a narrow, not semi-cordate, leaf base; the leaf is broadest in the middle; the leaf and calyx margins are glabrous; and the pedicel is shorter (only 1-1.5cm long). *Vincetoxicum louiseae* and *Vincetoxicum rossicum* are not evergreen like *V. major*, the leaves bases are rounded, and the seeds bear a coma. *Vincetoxicum louiseae* leaf margins are not

ciliate, and the abaxial surface is pubescent. Further, the inflorescence bears 4-12 dark purple flowers, but only one violet flower in *V. major*. *Vincetoxicum rossicum* inflorescences bear 5-20 pinkish-red to maroon flowers. *Lonicera* spp. are woody throughout, not only at the caudex. Further, the flowers of *Lonicera* are zygomorphic (actinomorphic in *V. major*), and produce berries, not follicles. Some species of climbing *Lonicera* (*L. caprifolium*, *L. sempervirens*, *L. reticulata*, *L. dioica*, and *L. hirsuta*) have distinctively connate pairs of leaves under the inflorescence, not present in *V. major*. Most of the other *Lonicera* spp. in Michigan without connate pairs of leaves are shrubs, except for *L. japonica*, which is also a vine. *L. japonica* has pubescent young stems and main veins on the adaxial surface of the leaves. *Campanula* spp. are non-climbing herbs with alternate leaves and conspicuous blue bell-shaped flowers with one style and three stigmas, the calyx is adnate to the ovary, which produces a three-locular capsule (1,2).

**Other members of the family in Michigan (number species):** *Apocynum* (2), *Asclepias* (12), *Vinca* (1), *Vincetoxicum* (2) (source 1).

**Ethnobotanical Uses:** *V. major* has many medicinal uses, although many parts of the plant are toxic and not edible, especially the seeds and latex. The plant is used as an astringent, tranquilizer, stomachic, tonic, to control excessive menstrual flow, irregular uterine bleeding, vaginal discharge, hardening of the arteries, nosebleed, sore throat, and mouth ulcers. The greater periwinkle is of great importance for the pharmaceutical industry due to the alkaloids vincamine and reserpine. They are used respectively to stimulate the brain and as a vasodilator, and to reduce high blood pressure. A semi-synthetic alkaloid originated from *Vinca*, vinorelbine, is used to reduce tumor growth rates, with a higher response rate when used in ovarian cancer, sarcoma, non-small-cell lung cancer, and bladder cancer. Non-medical uses of the plant include basket weaving (9,10,12).

**Phylogenetic Information:** The family Apocynaceae is in the order Gentianales, part of the Asterid I clade of the Core Eudicots. Also part of the Gentianales is Rubiaceae, Gentianaceae,

Loganiaceae, and Gelsemiaceae. “Apocynoideae, as well as the old Asclepidaceae and Periplocoideae, form the APSA clade, relationships within which are being clarified” (4). Members in the Apocynaceae and the old Asclepidaceae have similar alkaloids and are used to develop drugs for cancer treatment (9).

**Interesting Quotation or Other Interesting Factoid not inserted above:**

*V. major* and *V. minor* were introduced to the United States in the late 1700s. The greater periwinkle has become seriously invasive in some riparian communities, decreasing biodiversity, tree sapling recruitment, and even interfering with federally threatened species populations such as the pallid Manzanita (*Arctostaphylos pallida*). In California, *V. major* is the host of a bacterial disease (Pierce's disease) that affects vineyards (11). Due to the waxy coat on the leaves of *V. major*, spraying herbicide as a control method is ineffective. It is recommended that small infestations are hand pulled (with roots), or herbicide can be applied directly to fresh stem cuts and bruises (14). One of the popular ornamental choices is the variegated version of *V. major*: the green leaves are mottled with cream (15).

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